WHAT IS CLAIMED IS:

1.   An image processing apparatus comprising:

a first discrimination unit that discriminates whether or not a target pixel belongs to a halftone dot region;

a second discrimination unit that discriminates whether or not the target pixel belongs to a color region;

a color region extending section that recognizes an extended region as an extended color region on condition that the extended region is formed by pixels that, the second discrimination unit has discriminated, belong to a color region; and

a color halftone dot region discrimination unit that discriminates a region as a color halftone dot region in case the region is recognized as an extended color region by the color region extending section and is formed by pixels that, the first discrimination unit has discriminated, belong to a halftone dot region.

2.   An image processing apparatus according to claim 1, wherein the second discrimination unit contains:

a color pixel sampling section that samples color pixels from image data; and

a first counter that counts the number of color pixels in a first region, including a target pixel, among from the color pixels sampled by the color pixel sampling section, and wherein

in case a count value obtained by the first counter

exceeds a predetermined value, it is discriminated that the target pixel belongs to a color region.

3. An image processing apparatus according to claim 2, wherein the color pixel sampling unit generates lightness data and saturation data of each pixel from image data, and samples color pixels by comparing a threshold determined based on the lightness data generated with the saturation data generated.

4. An image processing apparatus according to claim 1, wherein, in case at least a pixel that, the second discrimination unit discriminates, belongs to a color region exists in a second region where a target pixel is centered, the color region extending section regards that the target pixel belongs to a color region regardless of a discrimination result obtained by the second discrimination unit and determines that the color region is to be extended.

5. An image processing apparatus according to claim 1, further including a halftone dot region extending section that recognizes a region as an extended halftone dot region in case the region is an extended region including a pixel that, the first discrimination unit discriminates, belongs to a halftone dot region, wherein the color halftone dot region discrimination unit discriminates a region as a color halftone dot region in case the region is recognized as an

extended color region by the color region extending section and recognized as an extended halftone dot region by the halftone dot region extending section.   .

6.   An image processing apparatus according to claim 1, wherein the first discrimination unit includes:

a halftone-dot-characteristic-point pixel sampling unit that samples a halftone-dot-characteristic-point pixel indicative of halftone dot characteristics from image data; and

a second counter that counts the number of pixels that exist in a third region, where a target pixel is centered, from among halftone-dot-characteristic-point pixels sampled by the halftone-dot-characteristic-point pixel sampling unit,

wherein in case a count value of the second counter exceeds a predetermined value, it is discriminated that the target pixel belongs to a halftone dot region.

7.   An image processing apparatus according to claim 6, wherein the halftone-dot-characteristic-point pixel sampling unit contains a filter that detects an isolation points as a halftone dot characteristic point.

8.   An image processing apparatus according to claim 1 further including a correction unit that corrects image data based on a discrimination result of the color halftone dot

region discrimination unit.

9.   An image processing apparatus comprising:

a first discrimination unit that discriminates whether or not each pixel belongs to a halftone dot region based on image data;

a second discrimination unit that discriminates whether or not each pixel belongs to a color region based on image data;

a color region extending section that extends a color region formed by pixels that, the second discrimination unit has discriminated, belong to the color region;

a color halftone dot region discrimination unit that discriminates pixels that belong to a color halftone dot region on condition that the pixels are included in a color region extended by the color region extending section, discriminated by the first discrimination unit such that the pixels belong to a halftone dot region; and

an image process unit that corrects image data based on a discrimination result obtained by the color halftone dot region discrimination unit.

10.   An image processing apparatus according to claim 9, wherein the first discrimination unit contains:

a first sampling unit that samples a halftone-dot-characteristic-point pixel indicative of halftone dot characteristic from image data;

a first counter that counts the number of halftone-dot-characteristic-point pixels in a first region, including a target pixel, from among the halftone-dot-characteristic-point pixels sampled by the first sampling unit; and

a first discriminator that discriminates whether or not a target pixel belongs to a halftone dot region by comparing a count value of the first counter with a first threshold.

11.   An image processing apparatus according to claim 9, wherein the second discrimination unit contains:

a second sampling unit that samples a color pixel from image data;

a second counter that counts the number of color pixels in a second region, including a target pixel, from among the color pixels sampled by the second sampling unit; and

a second discriminator that discriminates whether or not a target pixel belongs to a color region by comparing a count value of the second counter with a second threshold.

12.   An image processing apparatus according to claim 9 further including:

a third discrimination unit that discriminates whether or not each pixel belongs to an edge region based on image data;

a halftone dot image internal character region discrimination unit that discriminates a pixel belongs to a halftone dot image internal character region in case the third discrimination unit discriminates that the pixel belongs to an edge region as well as the first discrimination unit discriminates that the pixel belongs to a halftone dot region,

wherein the image process unit corrects image data based on a discrimination result of the color halftone dot region discrimination unit and a discrimination result of the halftone dot image internal character region discrimination unit.

13. An image processing apparatus according to claim 9, wherein, in case at lease a pixel that, the second discrimination unit discriminates, belongs to a color region exists in a third region where a target pixel is centered, the color region extending section regards that the target pixel belongs to a color region regardless of a discrimination result obtained by the second discrimination unit and determines that the color region is to be extended.

14. An image processing method comprising:

a step 1 of discriminating whether or not each pixel of image data belongs to a halftone dot region as well as whether or not each pixel of image data belongs to a color region;

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a step 2 of extending a color region formed by pixels that, the step 1 has determined, belong to a color region;

a step 3 of discriminating pixels that belong to a color halftone dot region on condition that the pixels are included in a color region extended by the step 2, and discriminated by the step 1 such that the pixels belong to a halftone dot region; and

a step 4 of correcting image data based on a discrimination result obtained by the step 3.